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ABSTRACT

Saxon's primary mathematics series is a "hands-on," success-oriented program which emphasizes manipulatives and mental math. The series addresses the multisensory approach to teaching. Its use enables all children to develop a solid foundation in the language and basic concepts of mathematics. Concepts are presented in carefully sequenced, small pieces called increments. New objectives are introduced through carefully selected group activities and all concepts are practiced in each succeeding lesson. Different areas of mathematics are integrated so that children can see their interrelationships. The teacher's manual provides activities and language appropriate for children at each grade level. The manual is scripted for the teacher providing successful questioning strategies that enable children to construct mathematical concepts. The five components of Saxon's primary math program are: (1) The Meeting; (2) The Lesson; (3) Written Practice; (4) Facts Practice; and (5) Assessment. (ASK)

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PRIMARY MATHEMATICS

a Saxon teacher's resource booklet

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Introduction

Saxon's primary mathematics series is a "hands-on," success-oriented program that emphasizes manipulatives and mental math. The series addresses the multisensory approach to teaching. Its use will enable all children to develop a solid foundation in the language and basic concepts of mathematics.

We have found that mastery of mathematical concepts does not occur quickly. Mastery and long-term retention require that the concepts be practiced over a long period of time. In this program, concepts are presented in carefully sequenced small pieces called increments. New objectives are introduced through carefully selected group activities. All concepts are practiced in each succeeding lesson. All areas of mathematics are integrated so that children see the interrelationships. Thus the presentation of concepts is not in "units" but is gently spread out over a considerable period of time.

The Saxon K–4 program is designed for heterogeneously grouped children. A four-year test of the program shows that the series is effective for children of all ability levels.

The teacher's manual has been carefully written to provide activities and language appropriate for children at each grade level. It is scripted (like a play), providing questioning strategies that enable children to construct mathematical concepts. Although it is not necessary to memorize the script, teachers are encouraged to follow the script and the questioning strategies as closely as possible in a way that is comfortable for the teacher. It is important that the activities in both the meeting and the lesson be included daily because of the opportunities provided for the different learning modalities.

The student materials (written practice and homework pages, masters, fact sheets, and fact cards) for the Saxon K–4 program are supplied in 24- or 32-student kits. **The student materials are not intended to stand alone without the teacher's manual.** When you implement *Math 1*, *Math 2*, *Math 3*, or *Math 4* using these classroom kits, you have all of the written material you need for an entire classroom of children. Student material is conveniently organized by lesson and stored in stackable, reusable crates, making it readily accessible during class time. See our catalog for additional information about packaging.

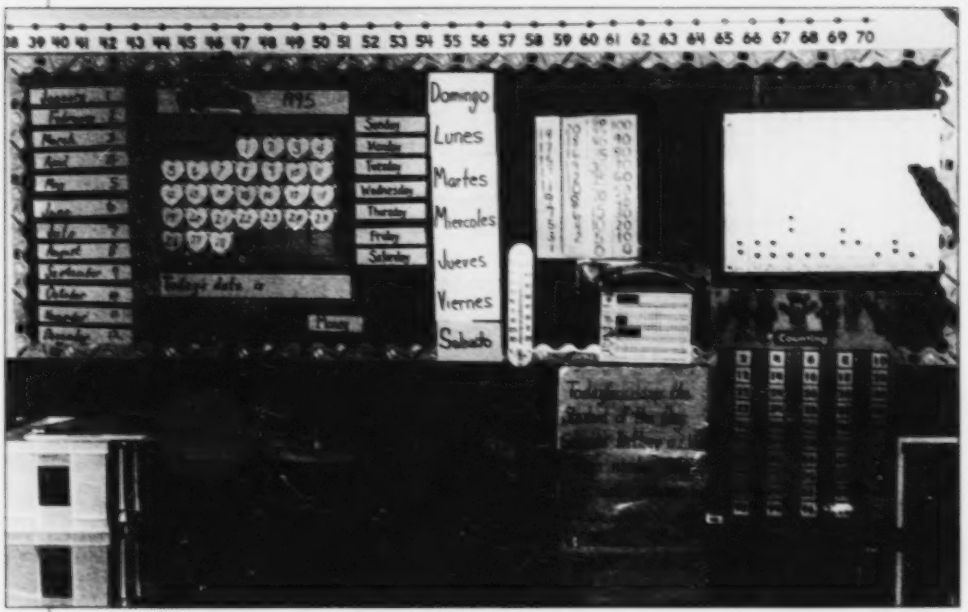
There are five components to Saxon's primary math program.

The Meeting • The Lesson • Written Practice
Facts Practice • Assessment

1. The Meeting

Each day the children will participate in a beginning-of-the-day math activity called the Meeting. This is a comfortable and predictable routine that is repeated in every grade (K, 1, 2, 3, 4) at appropriate conceptual levels. It is important that this take place each day when all the children are present. At different times in different grades during the Meeting, the children practice skills related to time, temperature, money, counting, patterning, and problem solving. The language and activities in the Meeting develop as the year progresses and expand on those from the previous grade level. Initially, the teacher leads the Meeting; the children gradually assume this responsibility.

The focal point of the Meeting is the bulletin board. It is not necessary to have a single board as long as all of the components are posted in view and within reach of all of the children. Each grade level has instructions in the teacher's manual describing the bulletin board for that program. If possible, construct the bulletin board in a place where children can sit in a semicircle in front of it.



A second-grade meeting board

At the beginning of the school year the Meeting will take longer than the recommended fifteen to twenty minutes. Both teacher and students will be adapting to this daily procedure, and as everyone becomes more familiar and comfortable with the routine, the Meeting will take less time. As the year progresses and students take a more active part in the leadership, the teacher will still maintain control over the pace of the activities. It is important that things not be allowed to drag as this will promote boredom and restlessness. One teacher uses a kitchen timer to help students be aware of the time taken in the Meeting. The group effort becomes one of keeping the pace moving. **Toward the middle of the year the teacher may choose to omit parts of the Meeting that the students have mastered** (except for once or twice a week as review) **so that the pace is energetic and the content interesting.**

One teacher's kindergarten bulletin board.

While complete instructions for constructing the bulletin board are found in the teacher's manual, these photographs from classrooms around the country are included for your consideration. Remember that not every element has to be on the bulletin board as long as it is posted for the children to see.

The shape pattern for the first grade calendar and the color pattern for the kindergarten calendar are detailed in the teacher's manuals. Note that the counting strips go from bottom to top. The names of the months of the year and the days of the week can be teacher-made

remember!

Don't hesitate to make your bulletin board's design unique. Just be sure that all the required elements are included.

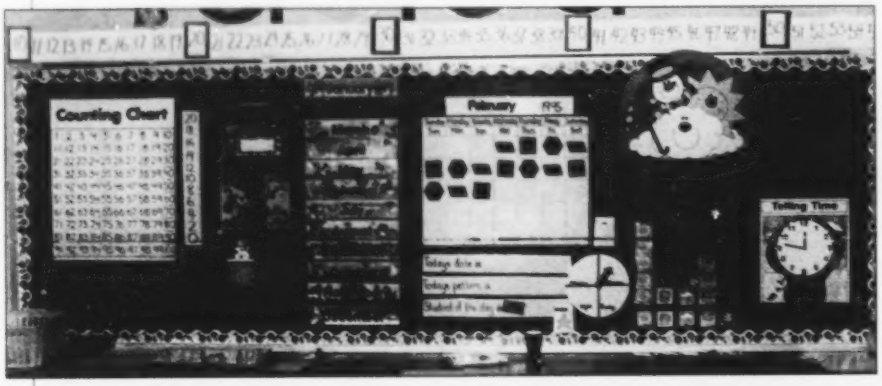
tip!

When using washable markers on laminated paper, spray the paper once a week with Endust for a clean surface.

or ready-made depending on the choice of the teacher. Some teachers have found that adding machine tape is convenient and a good size for strips such as the date and pattern of the day. Other teachers use sentence strips. Rather than using strips of paper, many teachers laminate parts of the bulletin board, and the children write directly on the laminate with a washable marker. When using washable markers on laminated paper, spray paper once a week with Endust for a clean surface.

Different aspects of the bulletin board are introduced as the year progresses. For example, in the first grade meeting the number pattern is introduced in Lesson 31 and the first counting strip in Lesson 43. Each aspect of the bulletin board is explained to the teacher either in the Lesson in which it is covered or in the instructions for preparation for the Meeting.

Graphing is taught in the Lesson and practiced in a variety of activities in the Meeting. **Some teachers will find that the data to be collected in the Meeting must be altered to fit the**

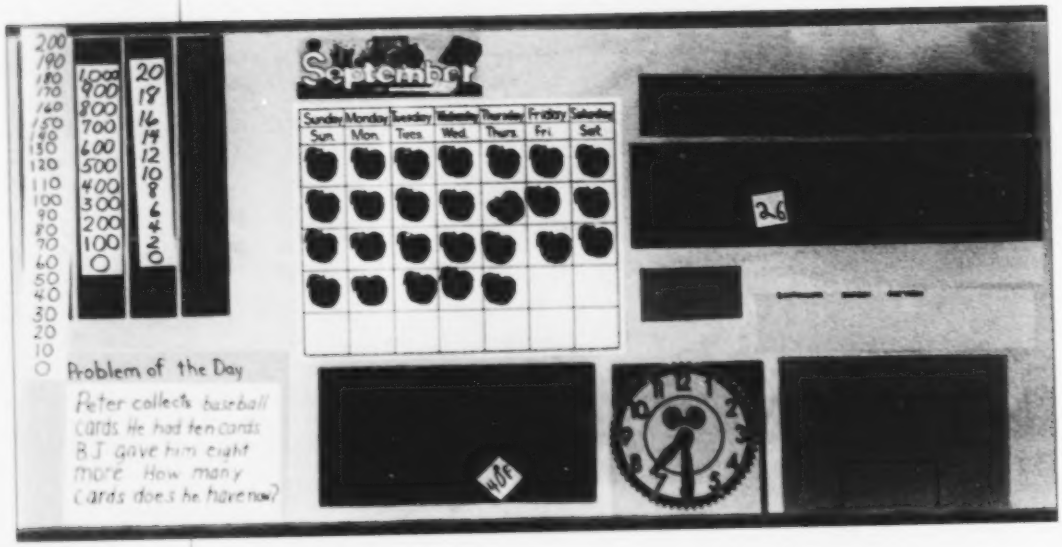


A typical first grade bulletin board.

circumstances in their school. Not all schools have the same lunch program (hot lunch, cold lunch, purchased lunch, free lunch, etc.) so the teacher will construct a graph that has meaning for the students in that school. If for some reason this graphing activity is inconvenient for the teacher, omit the activity. Also, the weather graph may need to be changed to suit your geographical location and climate. In *Math 2*, a new weather graph is introduced in Lesson 70. Until that lesson, the temperature is recorded on the graph introduced in Lesson 1.

Some nonstandard patterns in the Meeting challenge teachers as how to read them (see *Math 2*, Lesson 19). In this instance, the language is not as important as the process. You might read

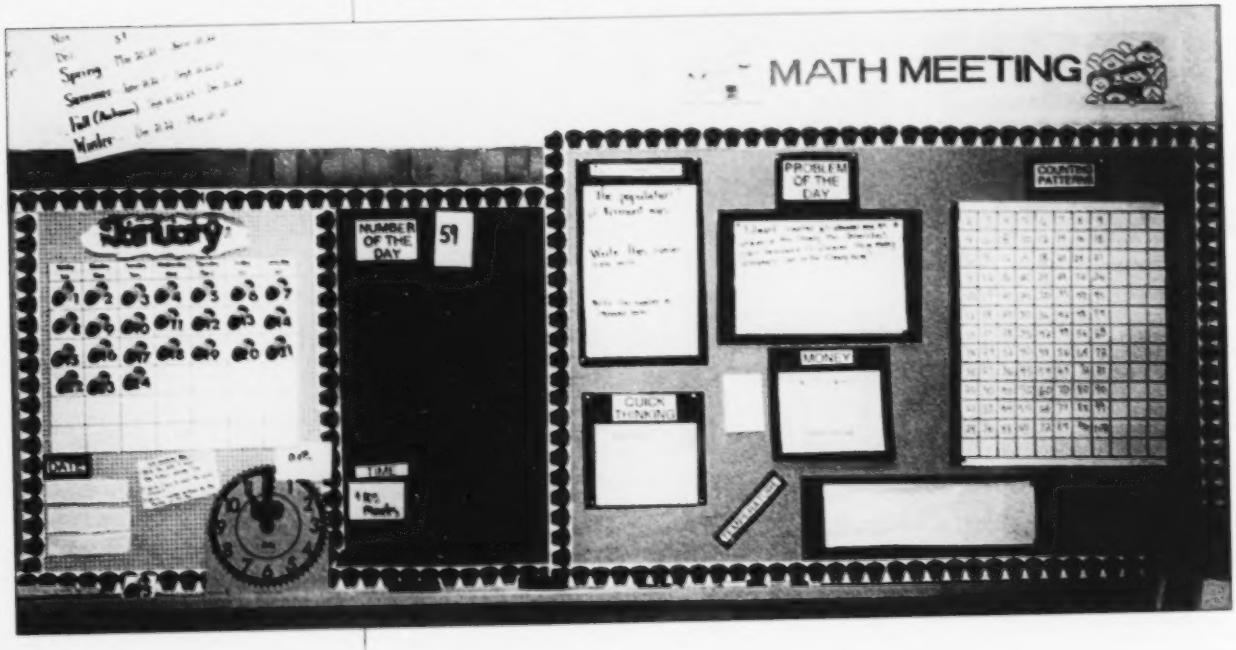
as "empty top half-circle, filled top half-circle, empty bottom half-circle, filled bottom half-circle," etc. If you drew the pattern using colored markers, the pattern might read "yellow top half-circle, red top half-circle, yellow bottom half-circle," etc.


September
Sunday Monday Tuesday Wednesday Thursday Friday Saturday
Sun. Mon. Tues. Wed. Thurs. Fri. Sat.
Problem of the Day
Peter collects baseball cards. He had ten cards. B.J. gave him eight more. How many cards does he have now?

Bulletin boards for Math 3 (above) and Math 4 (below).

The bulletin boards shown in this booklet were made by teachers using materials that were available in their schools.

Saxon Publishers does not make or sell bulletin boards or their components. However, a firm in Texas has developed ready-made bulletin boards for teachers who wish to purchase rather than make their own. For information about ready-made bulletin boards, see the ad on the back inside cover of this booklet.



2. The Lesson

The Lesson usually occurs later in the day. During the Lesson, a new objective (increment) is introduced through a carefully selected group activity. Children use materials, engage in discussions, work in cooperative groups, and work together to help each other learn. Teachers should not expect children to perform beyond the difficulty level of the presented problems, nor should they worry if a child does not "catch on" during the first encounter with a concept. It is expected that the child will work on problems at the same level of difficulty for several days or weeks before proceeding to the next level of difficulty. The concept will be extended in subsequent lessons.

In kindergarten the Meetings and the Lessons are found separately in the teacher's manual (except for a few lessons, such as the lesson for the first day of October). Consequently, some teachers are confused as to when to teach the first lesson. Although the first meeting is done on the first day of class, the first lesson is taught when the teacher is ready to begin the math curriculum. It could be as early as the first week of school or as late as the third week of school. Teachers beginning *Math K* in late August or early September should be teaching somewhere between Lessons 45 and 50 by the end of the first semester.

In grades 1–4, four lessons should be completed each week. The extra day of the week can be used as a catch-up day or for math games or projects. The Meeting should take place on the extra day as well. The teacher can use the Meeting from the previous day (or any day that week) by changing the parts to reflect a new day. In weeks containing an assessment, four lessons (including the assessment) should be completed. At the kindergarten level, three lessons should be completed each week, with the Meeting being conducted each of the five days. The Meeting script for the first day of the month also contains the Lesson for that day.

Again, teachers are encouraged to follow the script as closely as possible. The language (terms) and questions used in each lesson are specifically designed to facilitate the development and understanding of the new concept. **It is important that the teacher not become discouraged at the length of time it takes to complete a lesson the first few months of the program**.

remember!

An extra day each week is built into the program. Use it for catch-up or math games or projects.

Teachers who have completed an entire school year will assure you that it does get better. You will soon be able to look at a lesson and decide whether to attempt it in one day or whether to divide it into two days. Don't forget that an extra day each week is built into the program! When dividing a lesson, we recommend keeping the fact practice with the Lesson and doing the written practice the following day.

Notes on Manipulatives

Manipulatives are an integral part of the primary math program. Saxon Publishers now has a kit that supplies many of the manipulatives used in *Math K*, *Math 1*, *Math 2*, *Math 3*, and *Math 4*. You may prefer to shop at your local educational supply store or any educational catalog for math supplies. For a list of manipulatives by grade level, contact Saxon Publishers.

The teacher is protected from "manipulative anxiety." There is always an introductory lesson when a new manipulative is incorporated into the program. There are classroom management strategies and suggestions for the teacher in modeling appropriate use of the manipulative. Students are given opportunities to explore with the new manipulative during the Lesson.

Certain manipulatives are used more frequently than others. Kindergarten teachers will need all of the materials in the manipulative kit. This kit includes a balance, large clock, teddy bear counters, dominoes (in six different colors), geoboards, mathlink cubes, wooden pattern blocks, and tangrams. The individual small clocks are used once or twice in the *Math K* program and can be borrowed if these are available in another grade. It may be possible for teachers of grades 1 through 3 to share many items that are required for the program. Some items are used frequently enough that the expense of buying them for each teacher is justified.

The frequently used items are as follows:

Math 1	***Math 2***	***Math 3***	***Math 4***
linking cubes	color tiles	large clock	safety compass
large clock	large clock	color tiles	rulers
small clocks	pattern blocks	pattern blocks	protractors
pattern blocks	geoboards		large clock
rulers	rulers		

Always be aware of the time it takes to pass out and collect manipulatives. It can make a big difference!

If you are supplementing manipulatives that are already available in your classroom, be sure that you have geoboards with 5 X 5 peg array. If you are attempting to make as many of your own manipulatives as possible, please call Saxon Publishers for further information.

To keep lesson time down to a minimum always be aware of the time it takes to pass out and collect manipulatives. You can distribute your manipulatives in plastic baggies, baskets shared by two or three students, paper cups, or buckets. Items can be stored in the same containers used for distribution. Analysis of distribution procedures can sometimes help you make a big difference in the overall length of your math time.

Manipulatives are a useful tool for teaching counting, sorting, comparing, classifying, recognizing and creating patterns, graphing, and performing arithmetic operations. Some of the concepts illustrated through the use of manipulatives are listed below.

	Math K	Math 1	Math 2	Math 3
Hundred Number Charts		Reading numbers Counting backward Adding one to a number Skip counting Identifying and locating numbers Adding ten to a number	Reading, identifying numbers Identifying one more, one less Identifying horizontal, vertical, and oblique lines Adding ten to a number Subtracting nine	Adding ten to two-digit numbers Subtracting ten from two-digit numbers
Teddy Bear Counters	Exploring Applying one-to-one correspondence Graphing, sorting Acting out story problems Creating patterns Identifying ordinal position			
Plastic Rulers		Drawing a line segment Measuring to the nearest inch Measuring feet Measuring centimeters	Measuring to the nearest inch Measuring to the nearest foot Measuring and drawing to the nearest half-inch Measuring height in feet and inches Finding perimeter	Measuring to the nearest inch, half-inch, quarter-inch, centimeter, millimeter Identifying, measuring length and width of a rectangle, finding the area Drawing line segments, drawing congruent line segments using inches, centimeters Constructing a number line Estimating and measuring distance using feet and yards Using a scale to find distance on a map
Folding Meter Yardstick			Identifying line of symmetry	Estimating and measuring distance using feet and yards
Geoboards Geobands	Exploring Creating shapes Copying lines, shapes, and designs	Creating shapes Identifying inside, outside Creating congruent shapes	Creating geometric shapes Identifying angles of a shape Identifying parallel, intersecting, and perpendicular lines Identifying and creating overlapping shapes Locating points on a coordinate graph	

	Math K	Math 1	Math 2	Math 3
Learning Clocks	Telling time to the hour	Telling time to the hour Telling time to the half-hour	Telling time to the hour, half-hour Determining elapsed time to the hour Identifying a.m., p.m., noon, midnight Telling time to 5-minute intervals	Telling time to the hour, half-hour Identifying a.m., p.m., noon, midnight Telling time to 5-minute intervals Telling time to the minute, quarter-hour Reading time as minutes before the hour
Student Clocks	Telling time to the hour	Telling time to the hour Telling time to the half-hour	Telling time to the hour, half-hour Telling time to 5-minute intervals Determining one hour ago, one hour from now	Telling time to the hour, half-hour Determining one hour ago, one hour from now Telling time to 5-minute intervals Telling time to the minute, quarter-hour Reading time as minutes before the hour
Balance	Comparing objects by weight	Identifying lighter, heavier Weighing objects using nonstandard units	Weighing objects using nonstandard units Subtracting half of a double	
Tangrams	Exploring Creating designs, covering designs Sorting		Covering area	
Geometric Solids		Identifying four geometric solids	Identifying six geometric solids	
One-inch Color Tiles			Adding doubles, doubles plus one Identifying and acting out story problems Identifying pairs Measuring, finding area Subtracting one, zero, and the number Dividing an even/odd set in half Using comparison symbols Making, labeling an array Multiplying by three, four Dividing by two	Identifying dozen, half-dozen Identifying perfect squares Finding one half of a set, a missing dimension of a rectangle Solving equal groups problems Multiplying by four Predicting and analyzing data Acting out division stories Dividing with remainders
Dominoes	Identifying equivalent sets, doubles		Creating graphs	
Pattern Blocks	Exploring Counting with one-to-one correspondence Identifying properties Sorting Graphing Covering area	Identifying attributes Covering area Sorting Graphing Identifying identical designs Identifying one half, one third, one sixth	Identifying attributes Creating and reading a pattern Identifying ordinal position Identifying fractional parts of a whole Acting out story problems Identifying geometric shapes Dividing a shape in half Representing mixed numbers	Identifying relative worth Making a design with a given value Finding perimeter Identifying largest and smallest perimeter for a given area Showing fractional amounts greater than one Adding and subtracting fractions with common denominators
Two-color counters		Graphing		Writing part of a set as a fraction
Mathlink Cubes	Exploring Graphing Applying one-to-one correspondence Counting with one-to-one correspondence Creating patterns Identifying ordinal position Measuring lengths of objects using nonstandard units	Counting Graphing Ordering sets Identifying fewest, most, first, last, between, ordinals, doubles, how many more, dozen and half-dozen, cubes Acting out story problems Adding one to a number, doubles plus one Measuring length and width using nonstandard units Subtracting one, two from a number Adding two to an odd/even number Comparing length using nonstandard units Dividing a set of objects	Estimation Ordering three-digit numbers	
Outdoor Thermometer			Reading temperature to the nearest ten degrees	Reading temperature to the degree Reading temperature on Celsius scale

Notes on Money

Money is occasionally used as a manipulative. The following list indicates the amount of money needed at each grade level.

Math K

Each child needs:
- 10 pennies
- 10 nickels
- 10 dimes

Math 1

Each child needs:
- 23 pennies
- 8 nickels
- 10 dimes
- 1 quarter

The teacher needs:
- 550 pennies
- 9 nickels
- 9 dimes
- 4 quarters
- *real or play money* { 15 one-dollar bills

Math 2

Each child needs:
- 20 pennies
- 8 nickels
- 10 dimes
- 6 quarters

The teacher needs:
- 50 pennies
- 10 nickels
- 10 dimes
- 10 quarters
- 1 one-dollar bill

Math 3

Each child needs:
- 12 pennies

The teacher needs:
- 54 pennies
- 10 nickels
- 10 dimes
- 10 quarters
- 1 one-dollar bill
- *play money* { 50 one-dollar bills
- 50 ten-dollar bills
- 10 hundred-dollar bills

Math 4

Each child needs:
- 10 pennies
- 5 nickels
- 10 dimes
- 4 quarters

The teacher needs:
- 10 pennies
- 10 nickels
- 10 dimes
- 5 quarters

3. Written Practice

Individual written practice is a short practice of the new objective and includes a continuous review of previously presented concepts. Written practice is a part of every lesson in grades 1–4. Children complete Side A of the written practice in class with the teacher's assistance. Side B, which mirrors the examples completed in class, is done at home. Children are encouraged to ask parents for help, if necessary, and to have them check their work. If children have answered a question incorrectly in class, help them correct their work before marking their papers. Children learn from the experience of correcting their mistakes, and it is important that they have the corrected paper to refer to as they complete their homework. Because the written practice is being used as a part of the initial learning experience rather than a reflection of what has already been learned, it is corrected but not graded.

Note: The student pages for *Math 1*, *Math 2*, and *Math 3* have been translated into Spanish. See our catalog or call us for more information on Spanish supplements.

The kindergarten math program is the foundation upon which *Math 1–4* is built. This program is in keeping with Piaget's theory of what is developmentally appropriate for this age student. Consequently, there is no written practice in kindergarten. Computation is taught through story problems and use of manipulatives. Extensive use of free exploration and guided discovery along with carefully considered activities prepares the students with a background in math for the coming years.

In the 1997 edition of the *Math K* teacher's manual, an optional handwriting component is included. Practice in writing numbers and number words is left to the teacher's discretion but the writing component is included as an option.

4. Facts Practice

Children are presented with strategies to help them learn the number facts. They are encouraged to recall the facts through the use of pattern recognition. Children practice the facts orally and monitor their progress in grades 2 and 3 with timed drills (fact practice sheets). Children do not compete against one another, but rather with their own past performance. It is expected that children will have automatic fact recall by the end of the third grade. Teachers might consider encouraging students to keep their own record of their scores on fact sheets. This helps the students track their own individual progress and promotes a sense of accomplishment.

tip!

For easy access, store each student's fact cards in a baggie, a personal check box, or a recipe card box.

Fact practice is facilitated by the use of student fact cards, which are included in the Saxon materials for *Math 1*, *2*, and *3* as consumable items. There are no fact cards in *Math 4*. Beginning in June of 1997, the large teacher fact cards will be provided in the kits and refills instead of being teacher-made.

Fact practice differs from grade to grade. Fact sheets are not timed in *Math 1*. Prior to working on a fact sheet the students are given class time to practice using their fact cards. The students are encouraged to better their score each time they do a fact sheet.

Concepts covered by Fact Practice: *Math 1*

Adding . . .	Card Color	Code	*Subtracting* . . .	Card Color	Code
doubles to eighteen	tan	AA1	zero	green	S3
zero	lavender	AA3	one	peach	S2
one	peach	AA2	half of a number	tan	S1
two	green	AA4	two	pink	S4
doubles plus one	pink	AA5	a number from ten	yellow	S6
sums of ten	blue	MA6	differences of one	lavender	S2
nine	yellow	AA7	using doubles plus one (to ten)	blue	S5
last eight facts (oddballs)	white	A8	last eight facts (leftovers to ten)	white	S9

Second-grade teachers can write sample problems from the first fact sheet in each series on the board. Children then identify problem types and review strategies for solving them.

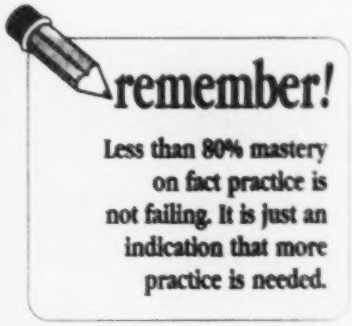
In *Math 2* the fact sheets are timed. To encourage students, give the first facts practice in each series without timing or counting it. Remember that the time allotted can vary depending on the difficulty of the facts. Allow two minutes or a minute and a half instead of the prescribed one-minute limit when these assignments are first introduced. If the majority of the students are not very successful on the final round with a set of facts, use some group practice techniques, then administer the sheet an extra time. The goal at the beginning of the year is for the students to complete at least fifteen problems correctly by the third time the fact sheet is worked. Teachers might consider drawing a line after the fifteenth problem before passing the papers out so that students know what they are working toward. Another tactic is to have the student indicate on the fact sheet where he or she finished in the allotted time. Then allow the child to finish the sheet in crayon prior to checking the answers.

The grade taken on fact sheets in *Math 2* is the best score of each fact sheet series. Keep in mind that this may not always be the fourth or fifth test.

Concepts covered by Fact Practice: *Math 2*

Adding . . .	Card Color	Code	*Subtracting . . .*	Card Color	Code
doubles to eighteen	tan	A1	half of a double	tan	S1
zero	lavender	A3	a number from itself	lavender	S3
one	peach	A2	zero	lavender	S3
two	green	A4	one	peach	S2
doubles plus one	pink	A5	two	green	S4
sums of ten	blue	MA0	nine	yellow	S7
nine	yellow	A7	differences of one, two, and nine	yellow	S7
last eight facts (oddballs)	white	AA8	a number from ten	blue	S0
			using doubles plus one	pink	S5
			last sixteen facts	white	S8

Multiplying . . .	Card Color	Code	*Dividing . . .*	Card Color	Code
by ten	green	M10	by two	lavender	D13
by two	lavender	M13			
by five	yellow	M14			
by three	pink	M17			
by four	blue	M15			



The time limit for the fact sheets is reduced to 45 seconds in *Math 3*. Again, this time can be lengthened initially to help the students adjust to the exercise. The teacher is targeting fifteen problems solved correctly by the last time the sheet is worked (usually worked at least three times). Some of the strategies used in *Math 2* can also be applied in *Math 3* to encourage the students to excel. (Compare facts practice to a video game: you have to practice, and each time you play you try to get a little bit further before time runs out!) Grades on fact sheets in *Math 3* are also the last grade or the best grade of each series. Avoid asking any of the children to state the number of facts done correctly in front of their classmates. Remember: Less than 80% mastery is not failing; it is just an indication that more practice is needed.

Concepts covered by Fact Practice: *Math 3*

Adding . . .	**Card Color**	**Code**	***Subtracting . . .***	**Card Color**	**Code**
doubles to eighteen	tan	A1	half of a double	tan	S1
zero	lavender	A3	a number from itself	lavender	S3
one	peach	A2	zero	lavender	S3
two	green	A4	one	peach	S2
doubles plus one	pink	A5	two	green	S4
sums of ten	blue	MA6	nine	yellow	S7
nine	yellow	MA7	differences of one, two, and nine	yellow	S7
last eight facts (oddballs)	white	AA8	a number from ten	blue	S6
			using doubles plus one	pink	S5
			last sixteen facts	white	S8

Multiplying . . .	**Card Color**	**Code**	***Dividing . . .***	**Card Color**	**Code**
by ten	green	M10	by one and ten	green	
by one	ivory	M11	a number by itself	ivory	
by seven	peach	M12	by two, five, and seven	lavender	D13
by two	lavender	M13	by four and eight	turquoise	D16
squaring numbers	pink	M17	by three, six, and nine	white	D19
by five	yellow	M14			
by eight	turquoise	M16			
by four	blue	M15			
by three and six	gray	M18			
by nine	white	M19			

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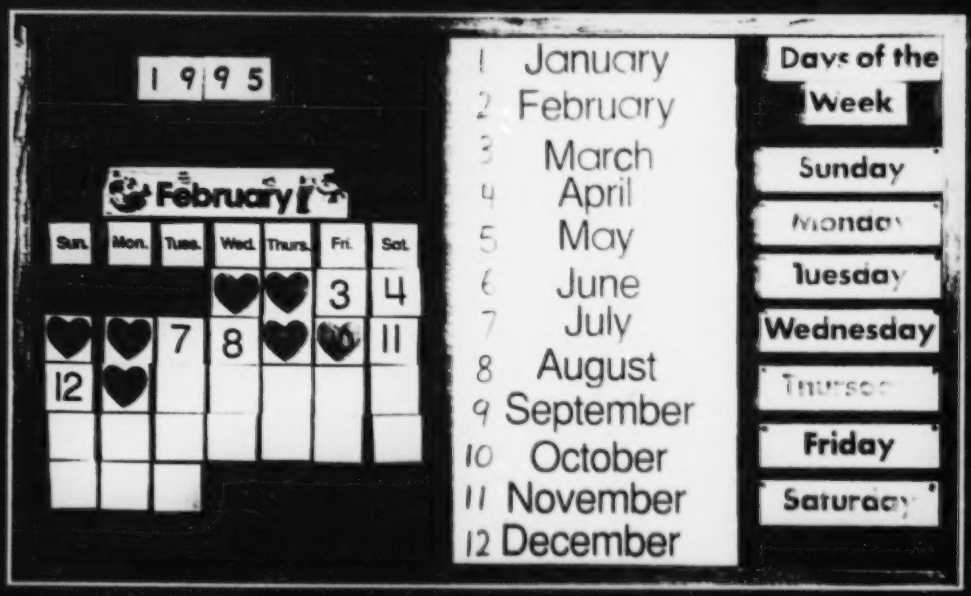

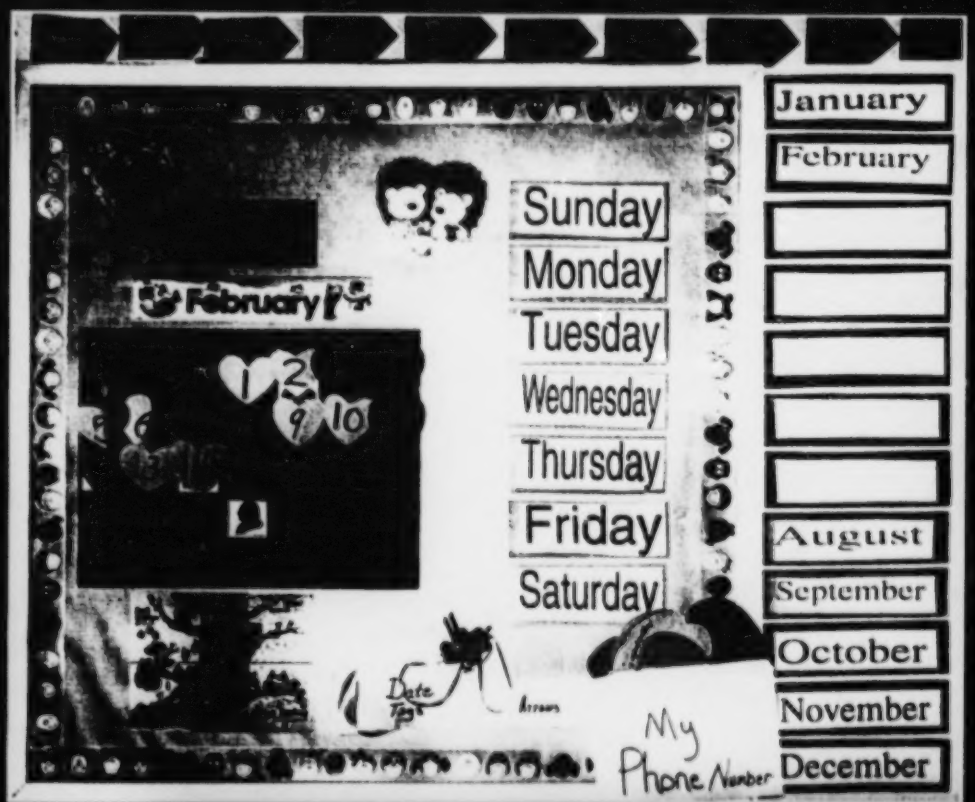

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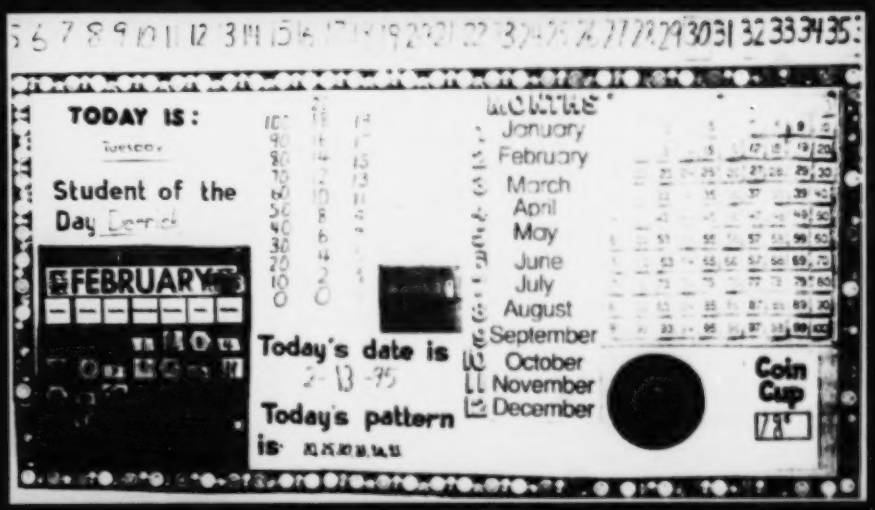

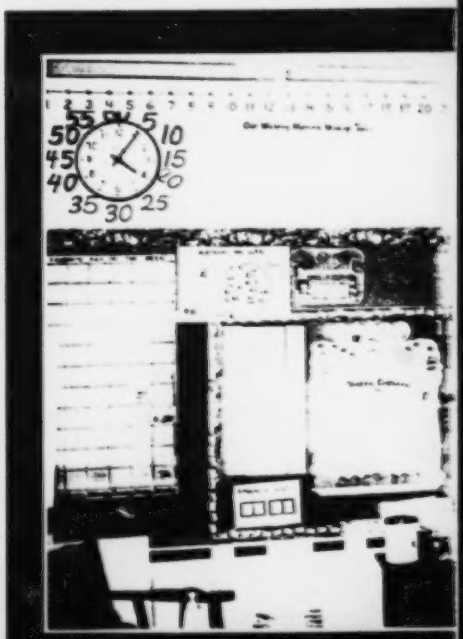

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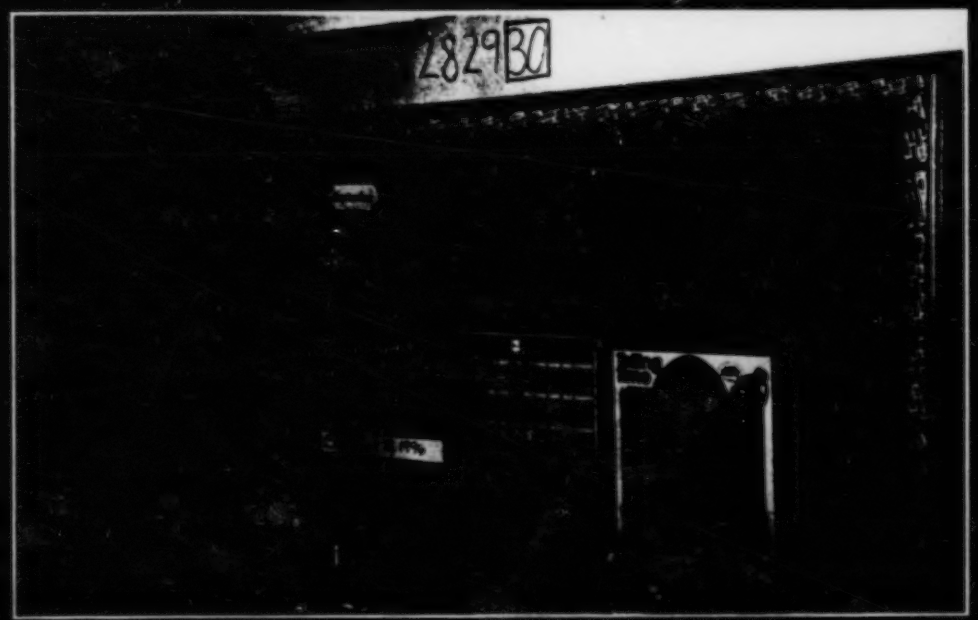

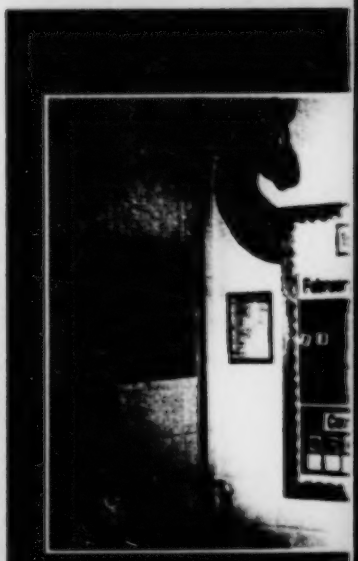

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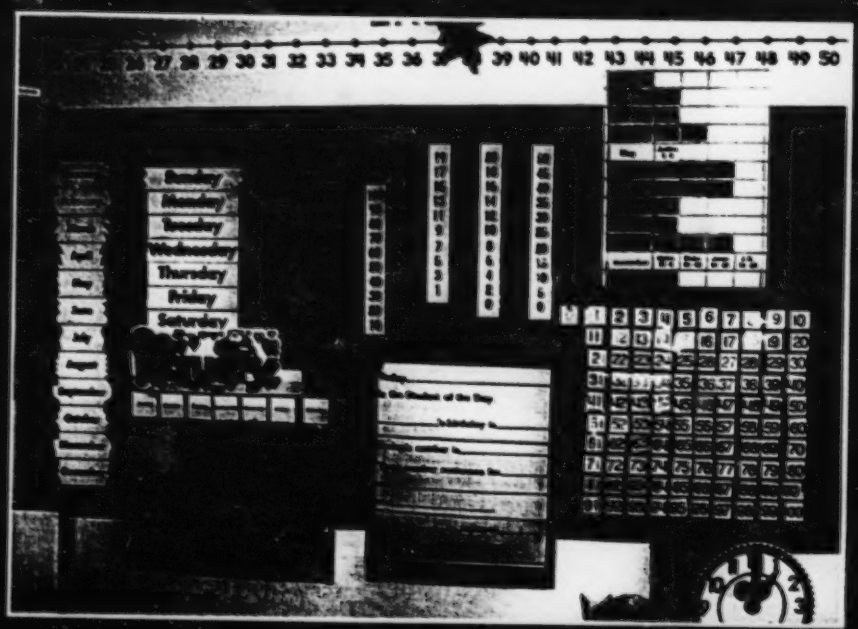

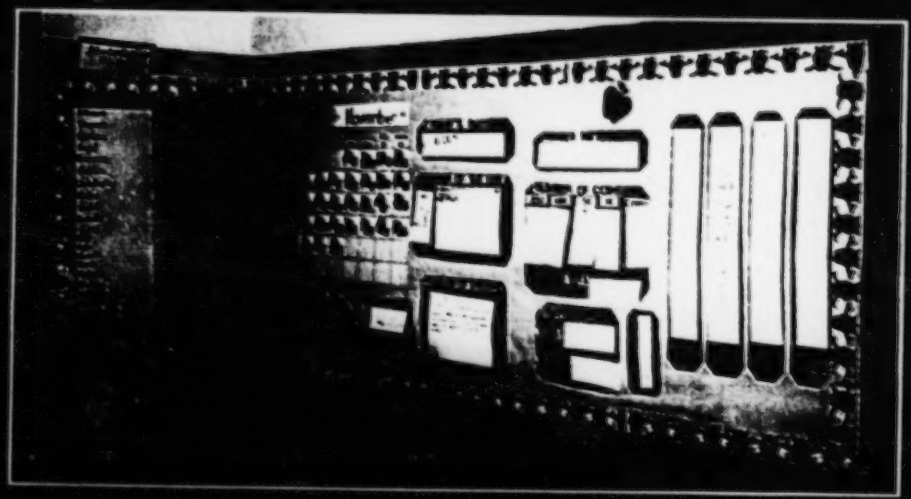

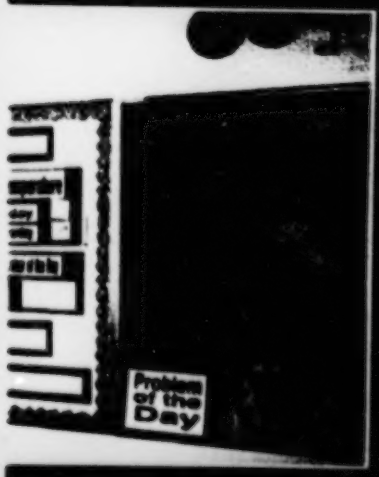

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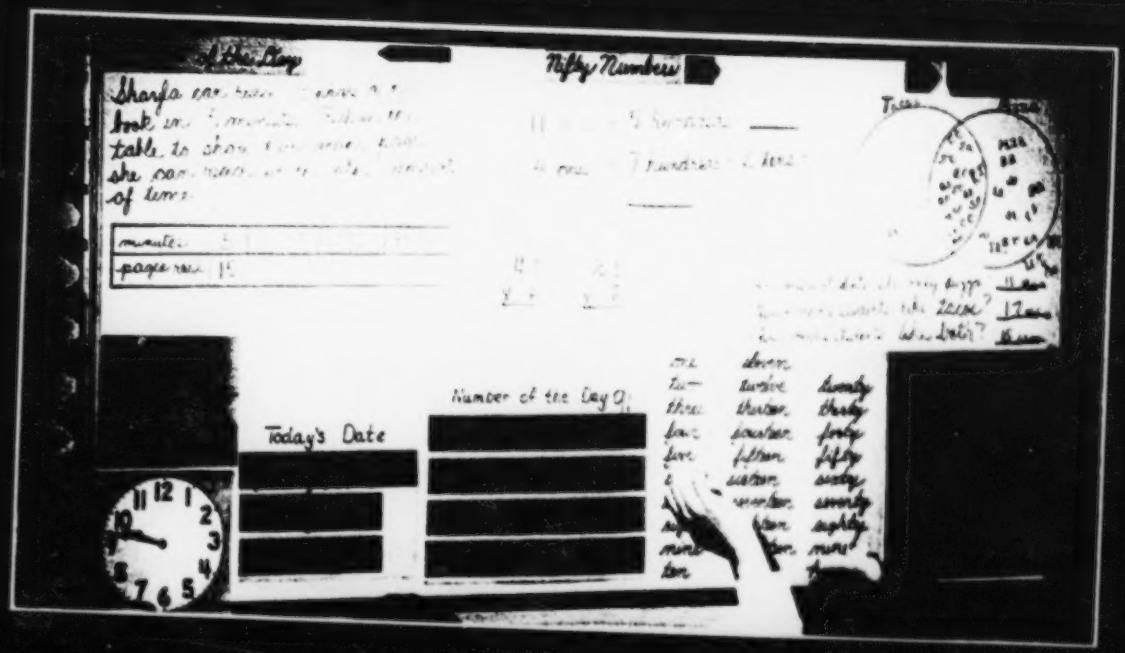

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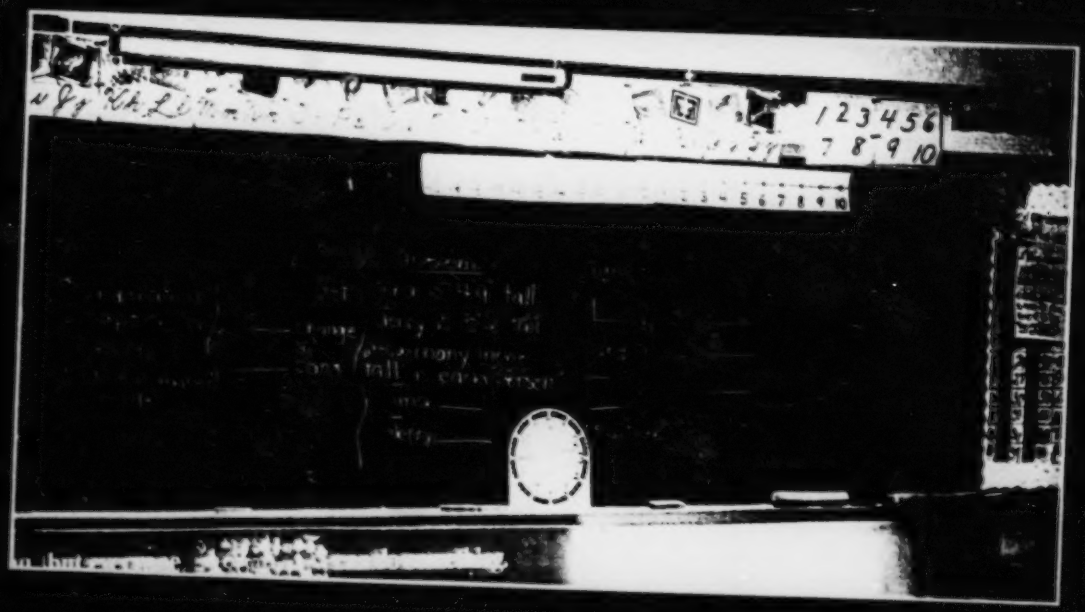

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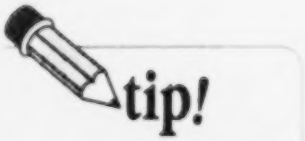
5. Assessment

Oral and cumulative written assessments are built into the program. Each assessment questions children on skills that have been practiced for at least five lessons. At grades 1–4, a written assessment occurs after Lesson 10 and after every five lessons thereafter. An oral assessment occurs every ten lessons. The oral assessments are short, individual interviews that occur during independent working time and on the extra day that is built into the program. Each oral assessment may be completed over a period of five days. At the kindergarten level, an oral assessment occurs after every six lessons; there are no written assessments. The teacher may take up to ten days to complete the assessment using activity periods or other appropriate times during the day.

In the 1997 editions, an answer key and scoring guide for written assessments is provided in the appendix of the *Math 1*, *2*, and *3* teacher's manuals. These scoring guides are suggestions for teachers to use as guidelines for grading the assessments. However, they are not to be considered as a mandatory part of the program. In a school where some teachers have already devised a scoring method, teachers using the program for the first time may choose to discuss the new scoring guide to arrive a uniform policy.

Be sure to give partial credit for each part of a question answered correctly. If a child skips a segment of the test due to oversight, return the test for completion. As this is a math assessment, not a reading test, children should not be penalized for missing a visual clue.



When creating a portfolio, be sure to include the assessment recording form.

Oral assessments are not intended to be graded, but are a diagnostic tool for the teacher. Monitoring children's errors on the assessments and prompt remediation are crucial to the eventual success of each child. If your kit has oral assessment forms for the class but not for individual students, you can obtain a copy of the individual oral assessment form by calling (800)284-7019, extension 427.

Recording forms are included for the purpose of monitoring the progress and/or remediation needs of each child in the class and as a means of sharing this information with parents. Individual Recording Forms included in the 1997 edition have been reformatted to allow the teacher to circle or mark the missed items on written assessments instead of writing out which items were missed. These forms will appear in all kits and refills purchased after June of 1997. When creating a portfolio for a student, be sure to include the assessment recording form and any masters the student has completed.

Classroom Management Strategies

Classroom management strategies are included in the lessons. Teaching children how to use and care for materials, follow directions, work cooperatively, listen to others, and clean up improves classroom organization and children's independence and responsibility. Appropriate behavior should be reinforced and praised. Children will live up to your expectations if your expectations are reasonable, clear, and consistent.

Listed below are a few tips to help you save time in the classroom.

the meeting

To keep students' attention and avoid discipline problems during the meeting, point at the meeting board, have the class answer questions as a group, and seat the children so all can see the board. Have the Student of the Day do some tasks ahead of time. Be sure to keep the pace moving. One way to do this is to avoid lengthy corrections of incorrect answers: Take a few seconds to correct and go on.

the lesson

Read the script through once to know where you are headed. Avoid lengthy explanations and don't expect every student to totally understand a concept the first time it is presented. Understanding comes with practice.

written practice

Assist students who are having difficulty so that they don't get bogged down on a particular problem. Teach students to use symbols such as stick figures instead of detailed drawings in the word problems. Let students work the easily understood problems on their own. Help them correct their mistakes as they work.

recording forms

If you must choose, ignore the group recording forms and concentrate on the individual recording forms.

Math K masters

After removing masters such as K-22, K-31, K-33, K-51, and K-64 from the teacher's manual, use binding tape along the bottom of a self-zipping freezer bag, punch three holes in the reinforced area, and store in the *Math K* binder.

the Math 4 atlas

Since the atlas is replaced each year with the *Math 4* refill kit, fourth grade teachers could "pass on" the previous year's supply to the fifth grade teachers.

fact cards

Separate the fact cards into two bags: one for addition and subtraction, the other for multiplication and division. Cards can be further separated into facts mastered and facts to be practiced.

Comparing Math 4 and Math 54

Administrators and teachers may wonder whether they need *Math 4* or *Math 54* for their fourth graders. Understanding the differences between the two programs will help in making the choice.

Math 4 is a continuation of the K–3 program written by Nancy Larson. This series has been carefully written to provide activities and language appropriate for children in heterogeneous classes. The teacher's manual (like those in K–3) is a large three-ring binder containing 140 lessons of approximately eight pages per lesson. Each fully-scripted individual lesson is bound in booklet form to allow the teacher to move freely about the room carrying only the lesson for that day. Each lesson is designed to be completed in one class period (unless otherwise noted in the teacher instructions). The student materials are consumable and packaged similarly to K–3.

The second edition of *Math 54* is a hardback book written by Stephen Hake and John Saxon. It is the first book in the Saxon middle-grade series and is designed for use by most fourth-graders. The order of topics is different from *Math 4*. The second edition (1995) places more emphasis on mental math and includes suggested activities to illustrate mathematical concepts. The teacher's edition contains answers but is not otherwise annotated. Topics and language introduced in *Math 3* are continued in *Math 54*.

The decision about which of these programs to choose will most likely be based on teaching style. Teachers who are looking for a program similar to our K–3 series will prefer *Math 4*, while those seeking the hardback approach of our middle- and upper-grades texts will be more comfortable with *Math 54*. While differing in format, both fourth-grade programs employ Saxon's incremental development with continuous practice.

management tips for Math 4

Here are some tips to facilitate management of the *Math 4* program:

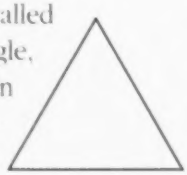
- Always read three to five lessons ahead so you will know what materials will be needed.
- Store fact sheets and homework in one of the pockets of the student notebook. Meeting recording sheets can also be stored here.
- Different components can be done at various times during the day. For example, written practice can be done separately from the lesson, and fact practice can be done at a different time of day.

Pattern Block Shapes

a quick review of geometry

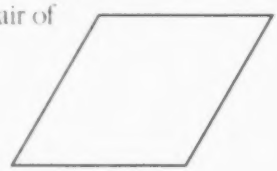
Polygons are simple, closed, planar (flat) geometric figures whose sides are line segments.

The **triangle** is the polygon with the fewest number of sides (three). If a triangle has one right angle, the triangle is called a right triangle. If one angle in a triangle is an obtuse angle, the triangle is called an obtuse triangle. If all the angles in a triangle are acute angles, the triangle is called an acute triangle. The pattern block triangle is an acute triangle.



A **square** is a rhombus with four right angles.

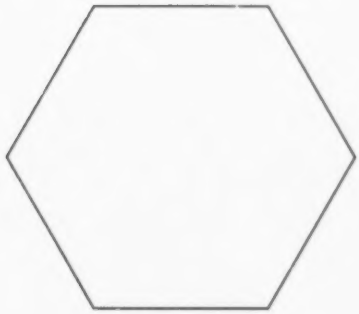
A **parallelogram** is a quadrilateral (having four sides) with two pair of parallel sides.



Although **diamond** is not a mathematical name for a polygon, we include the definition for your information. A diamond is a figure with four equal sides forming two inner obtuse angles and two inner acute angles.

A **rhombus** is an equilateral (having equal sides) with two pair of parallel sides.

A **trapezoid** is a quadrilateral that has exactly two parallel sides.



A **hexagon** is a polygon with six sides.

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Notes on Starting Late

Teachers who receive the Saxon primary math series after the beginning of the school year and who have been teaching from a different math program need a special time of adjustment. The Saxon program is different from that of other publishers in that concepts are presented incrementally and then practiced continuously. Since there are no "units," it is difficult for a teacher to determine where we present what has already been covered in the text previously used. Consequently, it is recommended that you begin at the beginning.

When a teacher begins Saxon math at the start of the school year, the early lessons are appropriate. They begin with a review of the previous year's concepts and a gradual introduction of material appropriate for the new grade level. However, if the class is several weeks into the school year when Saxon math is introduced, teachers will need to read the lessons carefully to determine which lessons can be combined and which ones contain enough new material that they must be taught in their entirety. Instead of teaching the recommended four days a week with the fifth day for reinforcement, reteaching, enrichment, or whatever, teachers start by teaching all five days. It is important that lessons not be skipped, although some concepts need not be covered in the detail presented in the teacher's manual if those concepts have been taught from the previous textbook or if mastery has already been achieved.

In accelerating the program, the idea is not so much to catch up to where you would be if you had started the program at the first of the school year but rather to reach the lessons where new learning is occurring. Sometimes this means that you will not finish the program, and that's okay. With Saxon math, every year begins with a review of the previous year's concepts. Therefore, your students will have the opportunity to cover the material from these lessons at a later date. Your goal is to complete 80–85% of the lessons by the school year's end.

starting *Math K* in October

Kindergarten teachers will need to make certain adjustments when beginning late. If your class is starting *Math K* in October, make the following adjustments:

Meeting: Begin with Meeting 3B but call the month October. Use orange and brown instead of green and orange for the color pattern. Use Meeting 4 for the following two days. Use Meeting 5 for the rest of October. Skip Meetings 6 and 7 and go to Meeting 8.

Lesson: Use the lessons in sequential order beginning with Lesson 1. Teach 4–5 lessons a week.

starting *Math K* in November

If your class is starting *Math K* in November, make the following adjustments:

Meetings: Begin with Meeting 3B but call the month November. Use the brown and red pattern instead of the green and orange pattern for the remainder of November. Use Meeting 4 for the following two days (substituting the correct color pattern and name of month where necessary). Use Meeting 5 for the rest of November. On December 1, use Meeting 8. You will have to change the language every time it identifies the month. Use the red and green pattern for December. Use Meeting 9 for the rest of December except for the last school day. Use Meeting 12 for the last school day in December. Use Meeting 13 for the first school day in January.

Lessons: Use the lessons in sequential order beginning with Lesson 1. Teach 4–5 lessons per week.

preparing for standardized testing

One of the more challenging situations facing teachers who begin late is preparing for standardized testing in the spring. If you are aware of the concepts that are regularly covered on the test at your grade level, you can start incorporating this type of problem in your math lesson before the standardized test is to be administered. For example, in first grade on the Iowa Test of Basic Skills (ITBS), students need to know double-digit addition, expanded notation, place value, and adding sums of ten, all of which are taught later in *Math 1*. (For example, sums of ten are taught in Lesson 94.) It is fairly simple to do examples of expanded notation and place value in your daily math meeting. This allows students to have the continuous exposure to these concepts without breaking the flow of the teacher's routine in following the lessons as they occur in the program. It may be necessary, however, to stop the regular lesson a few weeks prior to testing and teach those concepts that will not have not been covered in time for the test. This would be appropriate for double digit addition and adding sums of ten.

communication with parents

Perhaps the greatest obstacle to overcome when beginning the program so late in the year is communication with your students' parents as to what you are doing. Many times when a teacher sends the written practice home with the students, parents become alarmed at what they perceive as regression of academic content. Parents require more reassurance than do the students that the simplicity of the early lessons is with purpose and reason. In keeping with our philosophy of incremental development and continuous review, the content of the program builds in difficulty all year. By the end of the year, the students will be amazing everyone with their knowledge and ability.

Tips for a Combined Classroom

from a survey of fourteen schools with combined classrooms

When adapting the program to suit a combined classroom, remember that math shouldn't frustrate or overwhelm, but should be a comfortable and enjoyable experience. Using this rule as a guidepost for any changes you make, the following suggestions are offered.

The Meeting

- Usually one meeting can be chosen (most use the higher-level meeting board but combine components of others as needed).
- Use various levels of questioning for each component.
- Save some components (like time or money practice) for lesson time.
- Pair students for reading the thermometer, telling time, or other multi-level task.
- Assure lower students that they won't be assessed on upper-level skills.
- Include lower-level students in upper-level lessons that might help in the meeting.

You know your own class and can use your own good judgment as to what level materials you would like to include. Remember, however, that the concepts learned in the Meeting build incrementally, and it may be confusing to jump around too much. First graders can usually handle second grade material if they are included in the appropriate lessons.

The Lesson

- Lesson schedules vary with classroom needs. Many teachers start the upper grades on task first. Some rotate classes so each level has a turn to have the lesson first. Others start those that have the most difficult lesson first.
- You may have to work at paring down the lesson time at the beginning of the year. Don't be discouraged—it gets easier as the year moves along. Remember that you are only expected to cover four lessons a week.
- Some teachers combine the lessons by teaching both lessons to the whole class. Others have all students sit in on only certain lessons such as measuring, graphing, or tally marks.
- In really small classes where you do not have enough students for the activity, substitute tiles, cubes, or bears for the data to be

collected. (Example: How many children came to school by a different mode of transportation? *Answer*: Take a handful of counting bears and substitute the following: The blue bears rode the bus; the yellow bears came by car; the red bears rode bicycles, and the green bears walked.)

Written Practice

- Side A for first graders should be done with the teacher.
- Second and third graders can have new or difficult problems explained to them and then set out on their own.
- The teacher can have all classes do written practice at once with teacher helping each as needed.
- Have older students help younger ones.

During lesson time, the class not being taught might do their fact practice. You can sort large flashcards into the various fact groups they are working on and put these in plastic buckets for extra practice. Students can play math games, work with some of the manipulatives used in previous lessons, use clock and money stamps to make their own worksheets, or you can assign work in other subject areas. This is also a good time for the students to work on the activities from the lesson that involved working in pairs, such as measuring objects or using the scales.

In the fourth grade (if using *Math* 54), lesson time is meant to be short with a longer period of time to work on the problem sets in class. The difficulty here is that if a student has trouble with a problem, you aren't available if you are with the other class. You might ask them to begin with the problems that are most difficult for them and spend five or ten minutes getting them started. After this, use students who find math easier to help out when needed. Also, having the fourth grade student correct any mistakes found in his/her homework at the chalkboard allows you to see if the student understands (while you may be working elsewhere in the classroom).

Fact Cards and Fact Sheets

- Practice can be provided in various ways: during the lesson, assigned in learning centers, pair older and younger students, and in spare moments using the entire class.
- The fifth day can be devoted to fact practice.
- Fact sheets can be done as seatwork.
- Tests can be timed by grade level or as a whole. (Good use of an aide would be to administer timed tests.)

Frequently-Asked Questions

Content

Q How does this program compare with a regular basal program?

- New learning is presented in increments rather than units.
- It provides for daily practice of all skills.

Q How much overlap is there between the grades?

- The concepts introduced in K are also included in 1, 2, 3, and 4 but differ in complexity.

Q How does this program meet the NCTM Standards?

- The program takes into consideration the needs of young children (hands-on and manipulative based).
- Children have excellent every day math skills. (mental computation, money, time, measurement)
- Children have a broad math background. (spatial, data analysis and number concepts)
- Children know that they are good at math and want to share their knowledge with others.
- Correlations to the Standards as well as to many state guidelines (Oklahoma P.A.S.S., etc.) are available upon request.

The Meeting

Q How long will it take me to construct the bulletin board?

- It depends on how particular you are.
  Normal person: 1–3 hours. Perfectionist: 5–10 hours.
  (Second-year teachers can cut the time in half.)

The Lesson

Q How long will the whole lesson take?

	Meeting	Lessons/Facts/Written Practice
Grade K	10–15 min.	10–30 min.
Grades 1–4	15–20 min.*	40–45 min.

*At the beginning of the year, the meeting is 20–25 minutes.

Q I don't have _____ minutes for math. What should I do?

- Do the fact practice at another time of day. It is very important that the fact practice not be omitted.

Q What if I don't finish all the lessons by the end of the year?

- The program is designed to be finished, although there is an overlap across the grade levels. This review would cover the latter part of the previous grade.
- *Math 3* and *Math 4* have 140 lessons. (You may want to do 5 lessons a week for the first 6–7 weeks.)
- *Math 2* has 132 lessons. (You may want to do 5 lessons a week for the first 5 weeks.)

- *Math 1* has 130 lessons.
- *Math K* has 117 lessons. (112 lessons plus 5 first day of the month lessons.)

Q What if I finish all of the lessons before the end of the year?

- If you consistently do five lessons a week, you **will** run out of material before the end of the year. It is important that you realize the function of the extra day.
- Pacing is important, and we recommend not rushing the children through the lessons.

Q How should I divide a lesson I want to spend two days on?

- This depends on the lesson. Do the fact practice on the first day and the written practice homework on the second day.

Q Can I skip a lesson?

- No. All lessons build upon previous lessons.

Q Can I do a lesson out of order?

- If you believe it necessary for a specific reason, such as upcoming standardized testing. Do not do the written practice or fact practice at this time.

Q What should I do on the extra day of the week in grades 1–4 and the two extra days of the week in kindergarten?

- Divide a long lesson into two parts.
- Reteach, if necessary; games, fact practice, and lessons that integrate math with science and social studies concepts; calculator and computer activities. Catch up on subjects that have been neglected for math!

Q What should I do if all of the children are having difficulty with a new concept? What should I do if I think that the children need extra practice or reinforcement?

- Provide extra practice or reinforcement on the fifth day of the week.
- Build it into the meeting.
- Be patient. Mastery is not expected on the first encounter and will develop over time.

Q Only a few children are having difficulty. What should I do?

- Repeat with a small group during class time or after school.
- Enlist the help of a resource teacher, parent, or aide.
- Use peer tutors.
- Use older student tutors during before-school time.

Q What should I do about a very gifted child in my class?

- The program was designed to meet the needs of children with a wide range of abilities. If you have a gifted child, we recommend that you provide extension activities and projects that incorporate mathematics and other content areas.

Q How much preparation is required for each lesson?

- 0–15 minutes. (occasionally longer)
- There is no copying of worksheets, masters, fact sheets, or assessments required.

Materials

Q We are going to share manipulatives between classes. How will we do that?

- Work out a morning/afternoon schedule for teaching the lessons.
- Teachers can arrange to be on different lessons (one teacher can be a lesson ahead of another teacher.)

Q How do I store materials?

- Use small baskets and containers in an area accessible to the children. Label the baskets to make material identification easy.

Q The materials take so long to pass out and collect. What should I do?

- Organize the materials at the beginning of the year:
  - put pattern blocks in baskets (one basket per four children)
  - put linking cubes in towers of 10 (*Math 1*)
  - put color tiles in bags of 25 (*Math 3*)
  - put 20 pennies in small cups, 10 nickels in small cups, 10 dimes in small cups (one cup of each for each child)
- Allow children to pass out and collect materials.
- Teach the children how to "take one and pass the others on.

Fact Sheets

Q A few of the children panic when being timed. What should I do?

- Allow them to complete the paper and write down the amount of time needed to complete the paper. Encourage them to work to improve that time.
- Allow the children to take extra copies of the fact sheet home to practice. Suggest that they record the time needed to complete the entire sheet and work to improve that time.

Q My children aren't learning the facts as well as I think they should. What should I do?

- Reteach the strategies.
- Provide whole class practice.
- Choose one or two facts to practice each day.
- Make up modified fact sheets if necessary.
- Ask parents to help at home.

Q I have a few children who consistently have trouble with fact sheets. What should I do?

- Encourage the parents to help the child.
- Use peer tutors or older children as tutors.
- Use computer fact practice.
- Choose one or two new facts for the child to learn at a time.

Q I have a few children who consistently do well on fact sheets. Do they need them?

- All children should participate. If a child finishes early, allow him/her to make up additional fact problems like those on the page until time is called. The child's score may be greater than 25.

Q My children aren't practicing appropriately when they are practicing with their study buddies. What should I do?

- Sit in with study buddies who are having difficulty practicing.
- Change study buddies.
- Model correct behavior for using fact cards.

Written Practice

Q What should I do if a child does not complete the homework?

- Have the child complete it at another time.
- Contact the parents.

Q The children can't read the questions and directions on the written practice. What should I do?

- Read them to the children.

Q Several of the children can't read the written practice sheets and the parents do not help at home. What should I do?

- Read all of the problems the night before.
- Have someone available in the morning to help these children.

Q Should I grade the written practice sheets?

- No. The written practice sheets are intended to be practice and children need to feel comfortable asking questions and asking for help.

Q My school district does not permit homework four nights a week. What do I do?

- In this case, the teacher can use side B as homework one night a week and on other days work side B with partners, in groups, independently and then checked with a partner, or as a class.

Assessment and Record Keeping

Q What should I do if a child is absent on the day of an assessment?

- Allow the child to complete the assessment the next day or wait until the next assessment occurs.

Q I can't seem to fit the oral assessments in. Do I have to do them?

- The oral assessments can be done over 10-day periods.
- The oral assessments assess important skills that are not covered on the written assessments. They also provide insights into how children solve problems.

Q How should I grade the written assessments?

- The grading policy is left to the discretion of the teacher.

Q How should I grade the oral assessments?

- Oral assessments are not intended to be graded. Rather they provide information on areas where children need additional practice and instruction.

Q How should I keep track of the children's scores on fact sheets and the written assessments?

- Use the provided recording forms or your own form or grade book.

Q Should I send the written assessments home?

- Whatever works best for you. If a child is having difficulty, make a copy of the child's paper for use during a teacher/parent conference prior to sending the paper home.

Q How can I let parents know about this program?

- Send the provided parent letter at the beginning of the year.
- Offer a "Family Math Night." (Children and parents attend a math class during the evening.)
- Invite the parents to visit the class during the math meeting or lesson.

Q What about report card grades?

- Work with the other teachers in your school to arrive at a common decision about report card grades. Every school's grading policy differs.

Standardized Testing

Q We test in March and some of the topics are in upcoming lessons. What should I do?

- Stop three weeks before the test. Calculate the lessons that would be completed if you taught four lessons a week as usual. Determine which concepts and types of problems need to be covered before the test. Take time to teach what needs to be covered prior to testing. Resume teaching regular lessons.

New Students at Midyear

Q What should I do about children who are new to the class midyear?

- Allow children to participate for six weeks before grading assessments.
- Provide a peer tutor during class time.
- Use copies of previous assessments to determine the skills of the new child. Use this information to catch the child up to the class.

Practicing Math Skills at Home

ideas for parents

Allow and encourage your child to count and use money.

- Ask your child to count the change from your wallet or pocket at the end of each day. If desired, put the change in a container for a special activity at the end of the month. At the end of each week, the money can be counted and recorded.
- Allow your child to try to pay with the correct bills and coins when buying items at a store.
- Allow your child to help you write checks and balance your checkbook.

Help your child practice telling time using an analog (not digital) clock.

- Ask your child to tell you when the clock shows the time you need to leave to go somewhere or the time a television program begins. Begin with time to the hour and half hour.

Play games with your child. Some games that include practice of counting, addition, logic, ordering numbers, and graphing include:

- Chutes and Ladders, Parcheesi, Yahtzee, Monopoly, Racko, Dominoes, Battleship, Master-mind

Help your child measure height and weight.

- Tape a measuring tape to a door frame, mark your child's height, and ask him her to read his her height from the tape. Do this every three or four months.
- Help your child use a bathroom scale to weigh pets or household objects. Try to estimate how much something weighs before weighing it.
- Ask your child to use a ruler or tape measure to measure objects in your home.

Ask your child to help measure ingredients when you cook or bake.

- If a mix requires a half-cup of water, ask your child to fill the cup to the correct level.
- When measuring sugar or flour, ask your child to select and fill the correct measuring cup.

Help your child read road maps and street maps.

- When taking a trip out of town, show your child a road map and discuss the route you will follow.
- If you have a street map of your own city, you might discuss the location of places that your child can identify and talk about the streets you would take to go from your house to those sites.

For more information or additional copies of this booklet,
contact Saxon Publishers at (800) 284-7019.

Math Activities Center K–3

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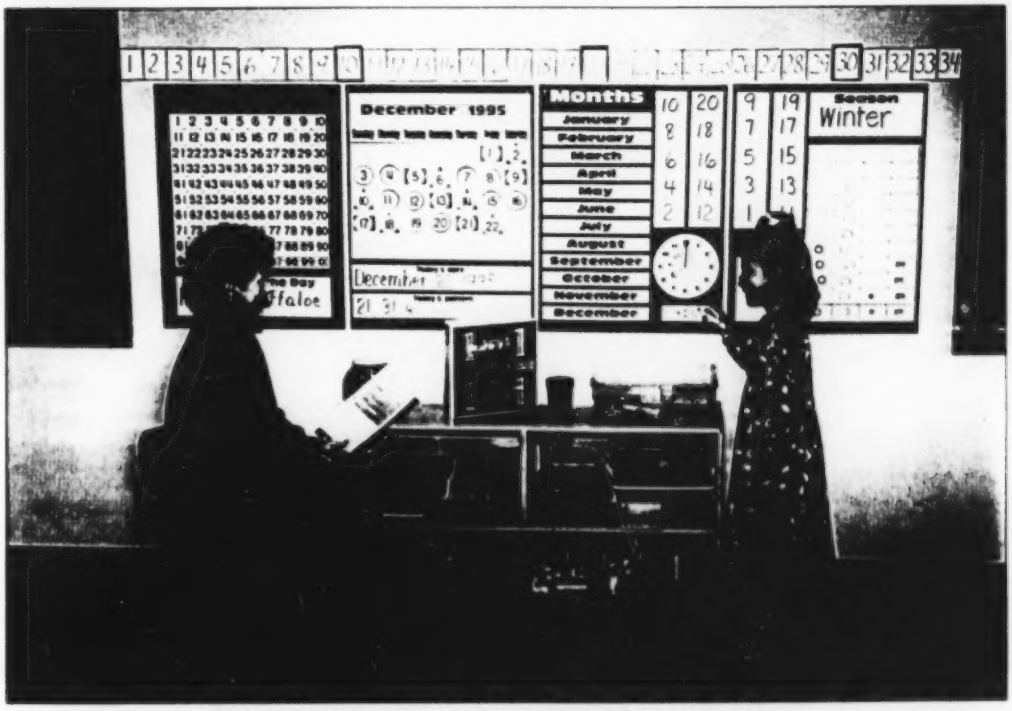

The Math Activity Center for first grade (MAC-1) is shown above.

- ***The students are totally involved in the daily math activities of Saxon math.***
- ***Math Activity Centers are available for each individual grade.***
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UP

"Math Activities Centers"

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